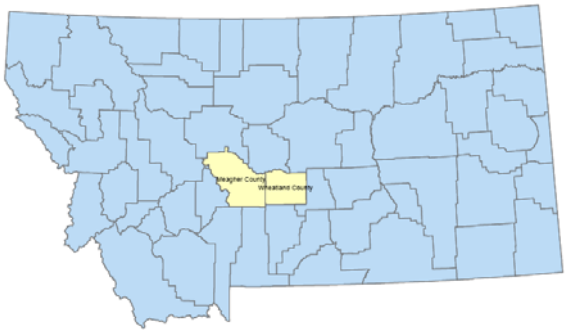
1. PROJECT DESCRIPTION

1.1. Project Site Description

1.1.1 Project Location

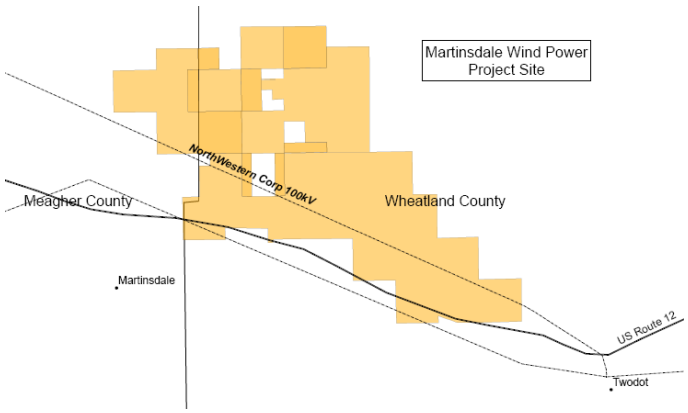
Martinsdale Wind Farm, LLC ("Applicant") proposes to develop, construct and operate the Martinsdale Wind Power Project (the "Project") on a site approximately 20 miles west of Harlowton located north of Highway 12 in Wheatland County and Meagher County, Montana. Maps showing the locations of Wheatland County and Meagher County and the Project are presented in Figures 1.1-1 and 1.1-2.

Figure 1.1-1: Location of Wheatland County and Meagher County, Montana



The Project site has all of the key elements required for the development of a successful wind power project: an excellent stable wind resource, access to high voltage transmission lines, supportive landowners, good transportation access and compatible land use and a supportive local community and county governments.

Figure 1.1-2: *Project Area Overview*



The Project is situated in one of the windiest areas of central Montana near the Crazy Mountains just above the Musselshell River valley floor. Wind turbines will be installed on open ridge tops within the rolling hills on the bench above the river valley floor. The strong NW winds are accelerated as they pass over these rolling hills through the valley.

The general area is characterized by rolling hills in a rural landscape of dry, rocky grasslands, areas of irrigated and dry land farm ground, grazing land and areas covered with a mixture of sagebrush, bitterbrush, and bunch grasses. The overall population density in the area is very low and few dwellings exist in the vicinity of the Project site.

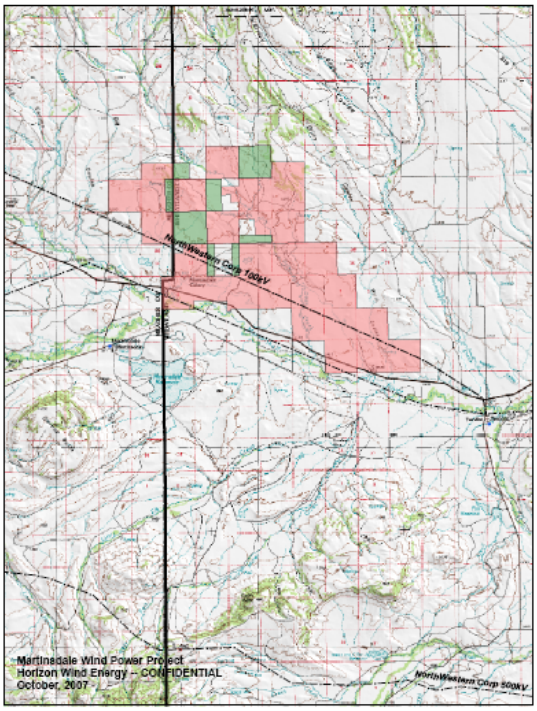
Land use in the area consists of open space, ranching and farming on privately-owned land held by large landowners and state owned property managed by the Montana

Department of Natural Resources and Conservation (DNRC) – land uses which are highly-compatible with the development of a wind power project.

The Project offers direct interconnection to NorthWestern Energy's 100 kV Two Dot to Great Falls transmission line which is located within the project site.

1.1.2 Site Control

1.1-3 Land Under Agreement with Horizon



The Project will be constructed on approximately 19,000 acres of privately and publicly owned land that the Applicant has leased from private landowners and is currently negotiating to lease from DNRC. The Applicant was selected through a competitive bid process by the DNRC to lease the wind development rights to the State's lands on the Project site. A description of the lands under control for the Project is shown in Figure 1.1-3.

Applicant has secured more than 16,000 acres of land in the vicinity of the Project site adequate for Phase I and subsequent phased development totaling approximately 300 MW. Applicant has configured the Project such that no upwind obstruction possibilities exist that would reduce the expected energy output. The site design has been made with an aim to optimize energy production by placing wind turbines at the windiest locations while still maintaining adequate turbine spacing so as to maintain high wake and array efficiency.

1.1.3 Site Layout

Phase I Project (72.5 MW Total Nameplate Capacity)

As proposed, the Project will have an installed nameplate capacity of approximately 72.5 megawatts (MW) and will most likely consist of 25 to 40 wind turbines depending on the final type of wind turbine generator (WTG) selected for the Project. The Phase 1 Project can be constructed on private land already under the Applicant's control and utilizing available transmission capacity located on the Project Site. The Project's significant components include roads, foundations, underground and overhead electrical lines, grid interconnection facilities, a substation, an operations and maintenance (O&M) center, and

associated supporting infrastructure and facilities. It is estimated that a 110 acre footprint will be required for Phase 1.

The preliminary Project site layout is designed situating WTGs on well exposed features within the Project area and spaced to maximize energy capture through careful siting and to minimize wake and array losses. This layout will be revised following a complete survey of the area and turbine selection.

Applicant has not yet selected specific Wind Turbine Generators for the site and is considering a range of viable options to determine the best technology and manufacturer combination for the Project. For this reason, Applicant is submitting a permit application that allows for flexibility in the number and size of WTGs to be installed.

Phase II Project and Subsequent Phases (227.5 Total Nameplate Capacity)
Upon availability of additional transmission capacity, the project will be expanded to comprise an estimated total capacity of 300 MW. It is anticipated that the full build out of the 19,000 acre site will result in less than 200 acres of permanently disturbed ground.

	Project Total Nameplate Capacity (MW)	**Permitting Agency**	**Commercial Online Date**
Phase I	72.5	State – Building permit	12/2010
Phase II and Beyond	227.5	State – Building permit	12/2013 and/or later

Permitting
Permits required for wind facilities in Montana include State level building permits for operations and maintenance center and pad-mounted transformer housing structures. No other state or county permits are required. The Applicant is completing a thorough Environmental Impact Statement to comply with the Montana Environmental Policy Act (MEPA) and support DNRC's state land leasing decision. The Environmental Impact Statement will need approval from state agencies with local government and public participation and input.

1.2 Project Facilities and Technology

1.2.1 Roads and Civil Construction Work

Access to the various rows of turbines will be achieved via graveled access roads branching from state Highway 12. The new site roads are designed to allow heavy equipment to tranverse the Project site and will be used throughout the life of the Project to allow access to and from the wind turbines, substations and meteorological monitoring towers.

Road Footprint

The road design has been prepared to minimize the overall disturbance footprint and avoid erosion risks. Wherever practical, existing roads have been utilized to minimize new ground disturbance.

The roads will consist of a 20 feet wide compacted graveled surface in most areas and up to 34 feet wide in other areas to support large cranes used to erect the WTGs. In areas of steeper grades, a cut and fill design will be implemented to keep grades below 15% to help prevent potential erosion issues.

Figure 1.2-1 Typical Wind Power Project Gravel Road

Rock Crushing and Aggregate

Two gravel permits are currently issued to the private landowner. It is anticipated that some of the aggregate necessary for the project will be produced from the existing permitted sites. Should blasting or other activities be required, the necessary permits will be obtained.

Water Supply

The private landowner will provide the water necessary for the construction operations for the Project. The Applicant has agreed to obtain water from a secondary approved source should the volume needed exceed water availability from the landowner and/or impact their on-going farming and ranching operations.

Weed Control

The Applicant shall make reasonable and conscientious efforts to control the introduction and suppression of all weeds which its operations introduce, or are likely to have introduced in the Project. Noxious weeds will be controlled using appropriate mechanical, biological and chemical treatments which meet the requirements of Montana and Federal laws and a weed control plan developed between the landowners, County weed control officials and the Applicant.

1.2.2 Turbine Foundations

During the detailed engineering design phase of the Project and prior to construction, a formal geotechnical investigation will be performed to analyze soil conditions and test for voids and homogeneous ground conditions. Depending on the results of the geotechnical investigation, either spread footing type foundation or a vertical mono-pier foundation, as shown in Figures 1.2-2 and 1.2-3 will be used. The foundation design will be tailored to suit the soil and subsurface conditions at the various turbine sites. The foundation design will be certified by an experienced and qualified, state-registered structural engineer.

Figure 1.2-2 Spread Footing Type Foundation

Figure 1.2-3 Mono-Pier Type Foundation

1.2.3Electrical Collection System Infrastructure

Electrical power generated by the wind turbines will be transformed and collected through a network of underground and overhead cables that terminate at the Project substation.

Power from the wind turbines will be generated at 575 Volts to 690 Volts (V) depending on the type of wind turbine utilized for the Project. Power from the turbines is fed through a breaker panel at the turbine base inside the tower and is interconnected to a pad-mounted or nacelle-encased step-up transformer at the tower base that steps the voltage up to 34.5 kilovolts (kV). The transformers are networked on the high side to underground or overhead cables that connect all of the turbines together electrically. The underground cables are installed in a trench that runs beside the Project's roadways as shown in Figure 1.2-4. Depending on geotechnical analysis at the site, native material or a clean fill material such as sand or fine gravel will be used to cover the cable before the native soil and rock are backfilled over the top.

Figure 1.2-4 Typical Underground Cable Trench

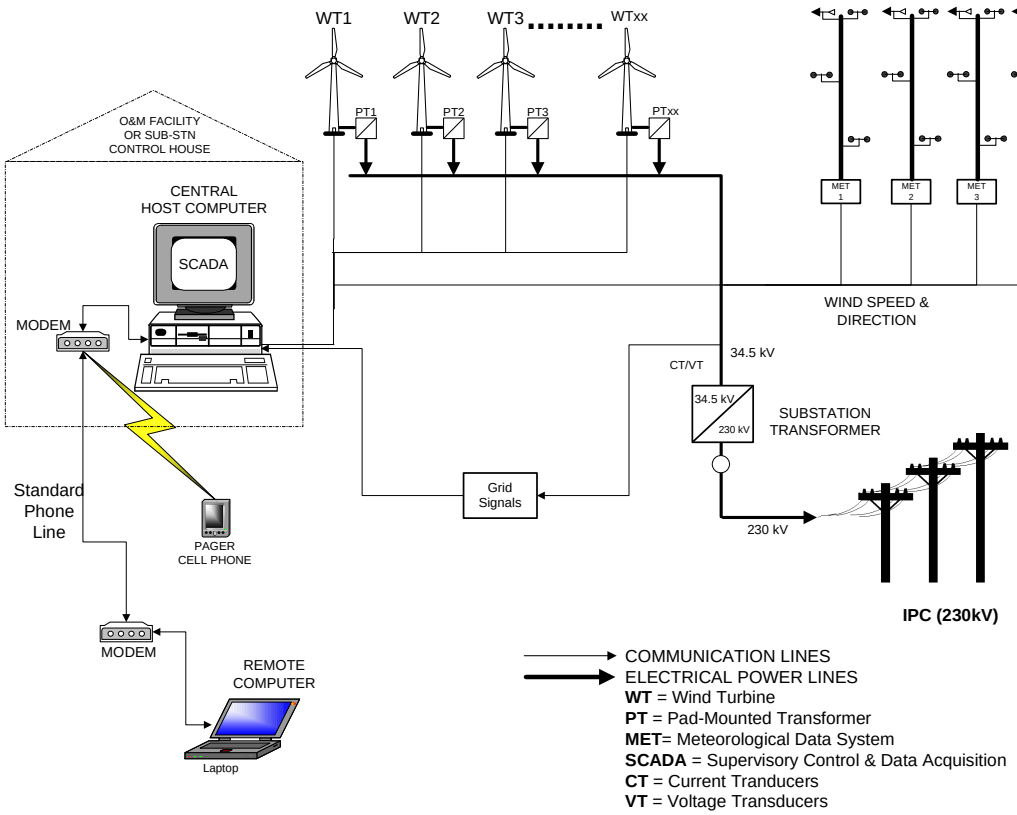
Figure 1.2-5 Typical Pad-Mount Transformer
(shown during construction before terminations landed)

Figure 1.2-5 shows a typical pad-mount transformer used at each wind turbine. The underground collection cables feed to larger feeder lines that run to the main substation as shown schematically in Figure 1.2-6.

For the few short runs of 34.5 kV overhead power lines, a fused, switch-riser pole will be used to run the cables from the underground trench to the overhead conductors. At the substation, the electrical power from the entire wind plant is stepped up to transmission level at 100 kV and delivered to the point of interconnection.

In locations where two or more sets of underground lines converge, underground vaults and/or pad mounted switch panels will be utilized to tie the lines together into one or more sets of larger feeder conductors.

Figure 1.2-6 Electrical and Communication Collection System



1.2.4 SCADA System

Each turbine is connected to a central Supervisory Control and Data Acquisition (SCADA) System, as shown schematically in Figure 1.2-6, through a network of underground fiber optic cable. The SCADA system allows for remote control monitoring of individual turbines and the wind plant as a whole from both the central host computer and from a remote PC. In the event of faults, the SCADA system can also send signals to a fax, pager, or cell phone to alert operations staff.

The SCADA system delivers real-time power output from the Project which can be accessed by power scheduling and system controls personnel to support real-time and hour-ahead power schedule schemes.

1.2.5 Wind Turbines

Wind Turbine Selection Procedure and Candidate Vendors

Applicant's technology experts regularly visit all the major turbine vendors' manufacturing facilities and stay constantly abreast of the latest developments and technology improvements. In selecting equipment, the manufacturer's track record of performance, financial strength, technical support, warranties, guarantees, and design certification are all important considerations.

Manufacturers selling turbines into European markets have, for many years, been required to meet rigorous standards verifying their design criteria, operational characteristics, supervision of construction, transportation, erection, commissioning, testing and servicing. Germanischer Lloyd (GL) and Det Norske Veritas (DNV), independent testing laboratories, administer regulations for the design, approval, and certification of wind energy conversion systems. In Denmark, Risø, a government research institute, also provides a similar certification service.

Neither Germanischer Lloyd, DNV, nor Risø will issue its certification unless the turbine design has met minimum design standards and performance levels, both calculated and measured. The approval process also applies to the manufacturers' processes and procedures through ISO 9001. Due to this arduous approval process, turbines that have been certified by Risø, DNV, or GL have proven to be the most reliable wind energy systems.

Wind Turbine Evaluation and Comparison

Applicant's technical staff is currently evaluating several wind turbines for the Project.

1.2.6 Interconnection Facilities and Substation

Figure 1.2-7 Typical Wind Power Project Substation

The main functions of the substation and interconnection facilities are to provide fault protection and to step up the voltage from the collection lines (at 34.5 kV) to the transmission level required to interconnect to the utility grid. The basic elements of the substation and interconnection facilities are a control house, a bank of main transformers, outdoor breakers, relaying equipment, high voltage bus work, steel support structures, and overhead lightning suppression conductors. All of these main elements will be installed on concrete foundations that are designed for the soil conditions at the substation sites. The substations and interconnection facilities each consist of a graveled footprint area of approximately 2-4 acres, a chain link perimeter fence, and an outdoor lighting system.

Final adjustment to the substation and interconnect are generally made during design review with the interconnecting utility and their system protection engineers to accommodate for conditions on the grid at the time of construction. .

1.2.7 O&M Facility

Figure 1.2-8 Top of Iowa O&M

An O&M facility will be located near the Project site. The O&M Facility will include a main building with offices, spare parts storage, restrooms, a shop area, outdoor parking facilities, a turn around area for larger vehicles, outdoor lighting and a gated access with partial or full perimeter fencing.